

ABSTRACT

Mass spectrometers, ion sources and methods for providing and transporting analyte ions derived from a sample to ion optics. A sample chamber is configured to receive a sample plate supporting a sample, and an illumination source is configured to illuminate the sample to generate analyte ions and particles. A matrix-protecting interface is located between the sample plate and the ion optics, and configured such that the shortest travel path between the illuminated portion of the sample plate and the sampling aperture or input of the ion optics is substantially obstructed. Alternatively, a gas flow directed at an angle from zero to 90 degrees relative to the main axis of the ion optics and away from the ion optics influences particles generated by the action of the illumination source away from the ion optics, and a voltage source extracts analyte ions of interest.